

Observations of the 1.35-cm Water-Vapor Line in Venus

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The Venus microwave spectrum has been measured with a 10-ft antenna and scanning radiometer over the frequency range 18 to 36 Mc/s. No evidence was found for the presence of the water-vapor line at 1.35-cm wavelength. Furthermore, comparison with results obtained at MIT, suggest that the spectrum of Venus in this wavelength region may be variable. A large number of theoretical models have been studied, none of which matches the observed spectrum precisely.

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Observations of Mars at 12.5-cm Wavelength

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Observations of Mars at a wavelength of 12.5 cm have been made with the 85-ft telescope at the Venus site of the Goldstone Tracking Station of the Jet Propulsion Laboratory. The equivalent blackbody disk temperature of the planet was measured on various dates as follows:

March 24, 1965	249 ± 75 °K
April 6, 1965	199 ± 57 °K
April 14, 1965	244 ± 71 °K.

The mean value observed was 225 ± 39 °K.

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On the Nature of the Cloud Layer of Venus (From Radiometric Observations at Microwaves)

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The hypothetic presence of supercooled water drops in the cloud layer of Venus has been checked by extrapolating the 8-mm wave absorption value, obtained from phase variation of radio brightness temperatures, into millimeter and centimeter wave ranges.

It has been shown that the extrapolated values of the radio brightness temperature spectrum are in satisfactory agreement with the radio brightness temperature values measured at the nocturnal side of Venus.

The content of water in the cloud layer is estimated to be about 0.2-0.3 g/cm², the absorption in the layer not exceeding 1.5 decibels in the centimeter range and being not above 5 decibels in the millimeter range for a wavelength of above 3 mm.